



# 404 416

## Max Air Surfaces

### Installation Manual

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# Regulatory and Safety Notices

## Warnings and Cautions



Never install equipment if it appears damaged.



Disconnect the power cord before servicing unit.



Only perform the services explicitly described in this document. For services or procedures not outlined in this document, speak with authorized Avid service personnel.



Follow all warnings and cautions in the procedures.



Operate the device within its marked electrical ratings and product usage instructions.



If you need to replace a battery in an Avid hardware unit, be sure to use the correct battery type. There might be a risk of explosion if a battery is replaced by an incorrect type. Dispose of used batteries according to the manufacturer's instructions.

## FCC Notice

Part 15 of the Federal Communication Commission Rules and Regulations has established Radio Frequency (RF) emission limits to provide an interference free radio frequency spectrum. Many electronic devices produce RF energy incidental to their intended purpose.

These rules place electronic equipment into two classes, A and B, depending on the intended use.

Class A devices are those that may be expected to be installed in a business or commercial environment. Class B devices are those that may be expected to be installed in a home or residential environment. The FCC requires devices in both classes to be labeled with the interference likelihood and additional operating instructions. The rating label on the equipment will show which class the product is (A or B). Class A product will not have an FCC logo. Class B equipment will have an FCC logo. The information statements differ on the two classes.

### Class A Equipment

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at personal expense.

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## Modifications

The FCC requires the user to be notified that any changes or modifications made to Avid hardware that are not expressly approved by Avid Technology may void the user's authority to operate the equipment.

## Cables

Connections to Avid hardware must be made with shielded cables with metallic RFI/EMI connector hoods in order to maintain compliance with FCC Rules and Regulations.

## PRODUCTS WITH MULTIPLE POWER INPUTS:

**WARNING:** Each power input is intended to be connected to a separate branch circuit. Risk of high leakage exists if multiple inputs are connected to a single source and protective earth is not present. A QUALIFIED SERVICE PERSON shall verify that each socket-outlet from which the equipment is to be powered provides a connection to the building protective earth. If any do not provide this connection, the QUALIFIED SERVICE PERSON shall arrange for the installation of a PROTECTIVE EARTHING CONDUCTOR from the separate protective earthing terminal to the protective earth wire in the building.

## Canadian ICES-003

### Class A Equipment

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

# European Union Declaration of Conformity



Declaration of conformity

Konformitätserklärung

Déclaration de conformité

Declaración de Confomidad

Verklaring de overeenstemming

Dichiarazione di conformità

We/Wir/ Nous/WIJ/Noi:

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Avid Technology International B.V.

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declare under our sole responsibility that the product,

erklären, in alleniniger Verantwortung, daß dieses Produkt,

déclarons sous notre seule responsabilité que le produit,

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declaramos, bajo nuestra sola responsabilidad, que el producto,

verklaren onder onze verantwoordelijkheid, dat het product,

dichiariamo sotto nostra unica responsabilità, che il prodotto,

**Product Name(s) : Max Air Surface Modules**

***Model Number(s): 404, 416***

**Product Options:** This declaration covers all options for the above product(s).

to which this declaration relates is in conformity with the following standard(s) or other normative documents.

auf das sich diese Erklärung bezieht, mit der/den folgenden Norm(en) oder Richtlinie(n) übereinstimmt.

auquel se réfère cette déclaration est conforme à la (aux) norme(s) ou au(x) document(s) normatif(s).

al que se refiere esta declaración es conforme a la(s) norma(s) u otro(s) documento(s) normativo(s).

waarnaar deze verklaring verwijst, aan de volende norm(en) of richtlijn(en) beantwoordt.

a cui si riferisce questa dichiarazione è conforme alla/e seguente/i norma/o documento/i normativo/i.

The requirements of the European Council:

Safety: Directive 2006/95/EC

EN 60065:2002 /A1:2006

EMC: Directive 2004/108/EC

EN 55103-1:1996

EN 55103-2:1996

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## LED Safety Notices



Avid hardware might contain LED or Laser devices for communication use. These devices are compliant with the requirements for Class 1 LED and Laser Products and are safe in the intended use. In normal operation the output of these laser devices does not exceed the exposure limit of the eye and cannot cause harm.

Standard to which conformity is declared: (IEC 60825-1)

Optical connections are located on the rear panel and are typically labeled "Optical" or "SPDIF/ADAT." The exact location of optical connections is identified more clearly elsewhere in the documentation for the Avid hardware device.



**Use of controls and/or adjustments or the performance of procedures other than those specified herein and elsewhere in documentation for the Avid hardware might result in hazardous radiation exposure.**

## Disposal of Waste Equipment by Users in the European Union



This symbol on the product or its packaging indicates that this product must not be disposed of with other waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city recycling office or the dealer from whom you purchased the product.

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# Rack-mount Requirements

The following rack-mount requirements are listed below:

- **Elevated Operating Ambient** — If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment might be greater than room ambient. Therefore, consider installing the equipment in an environment compatible with the maximum ambient temperature (T<sub>ma</sub>) specified by the manufacturer.
- **Reduced Air Flow** — Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised. Do not block vents.
- **Mechanical Loading** — Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- **Circuit Overloading** — Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- **Reliable earthing** — Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (for example, use of power strips).

# Lithium Battery Replacement

If a battery is supplied in this Avid product it *must* only be replaced by qualified personnel. Contact Avid Customer Support for assistance.

## WARNING

**Danger of explosion if battery is incorrectly replaced. Replace with only the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.**

## ADVARSEL!

**Lithiumbatteri - Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandøren.**

## ADVARSEL!

**Lithiumbatteri - Eksplosjonsfare. Ved utskifting benyttes kun batteri som anbefalt av apparatfabrikanten. Brukt batteri returneres apparatleverandøren.**

## WARNING

**Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion.**

## VAROITUS

**Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.**



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## System Startup Sequence

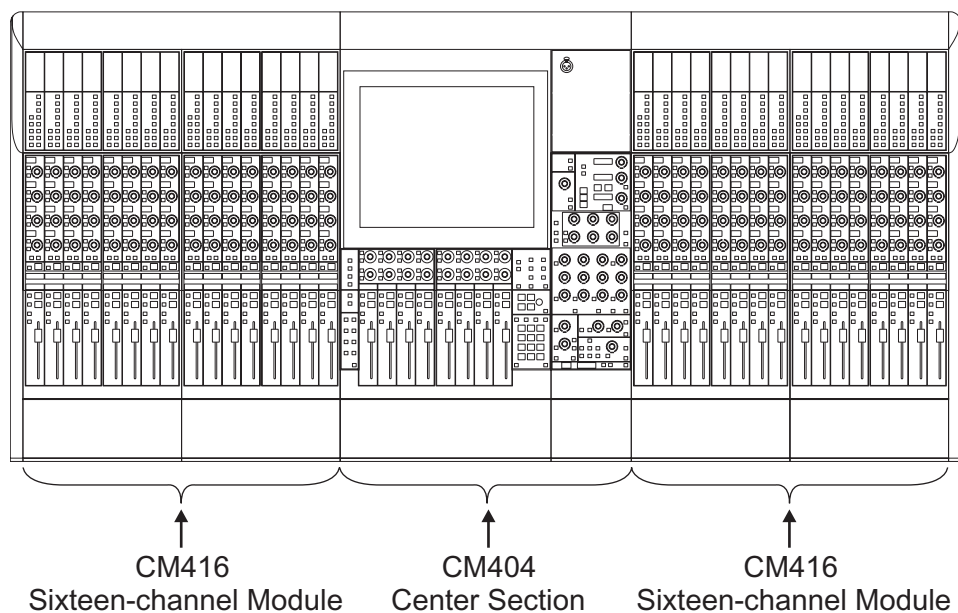
See page 21 in the *Max Air Operation Manual* for the system startup sequence.

## Description

The Max Air Console consists of a configurable number of Control Modules that comprise the Control Surface. The Max Air Control Surface is the digital control center for all Max Air system components and communicates with them via Ethernet network connections. Control signals are transmitted via the Ethernet switch and distributed to the Max Air system components. No audio passes through the Control Surface.

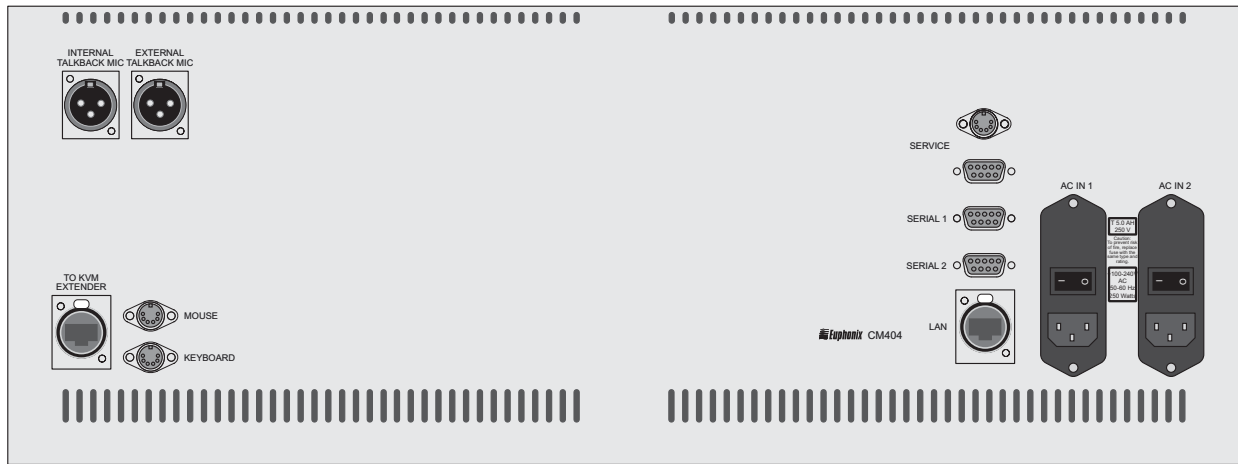
## Overview

The Max Air console must contain a CM404 center section module and can have up to three fully loaded CM416 16-channel Modules, each with 16 physical faders. The system can have up to 48 faders, not including the eight faders in the CM404 master section. The CM416HL and CM416HR are half-loaded (left or right) 8-fader modules that can be used to expand your system.

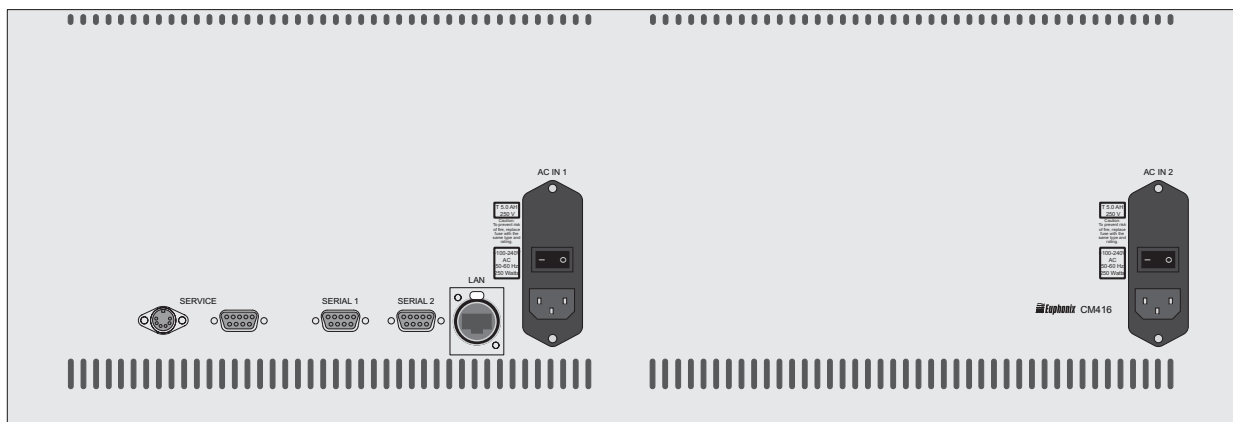


**Figure 1** Typical Console Layout

## Rear Panels



**Figure 2** CM404 Rear Panel



**Figure 3** CM416 Rear Panel

**Power Connectors (IEC):** Accepts two standard IEC power cords (provided). Two autotransforming switching supplies accept voltages between 100–240 VAC, 50–60 Hz.

**LAN Port (RJ45):** Connect to EuCon Network Hub via RJ45 through the console ethernet harness (provided).

**To KVM Extender (RJ45):** Connection to KVM extender (CM404 only)

**Talkback (XLR):** Connection to the internal and external talkback microphones.

**Keyboard and Mouse (PS2):** Connection to the keyboard and mouse or trackball.

**Serial 1, 2 (DB9):** RS232 serial ports (for service only).

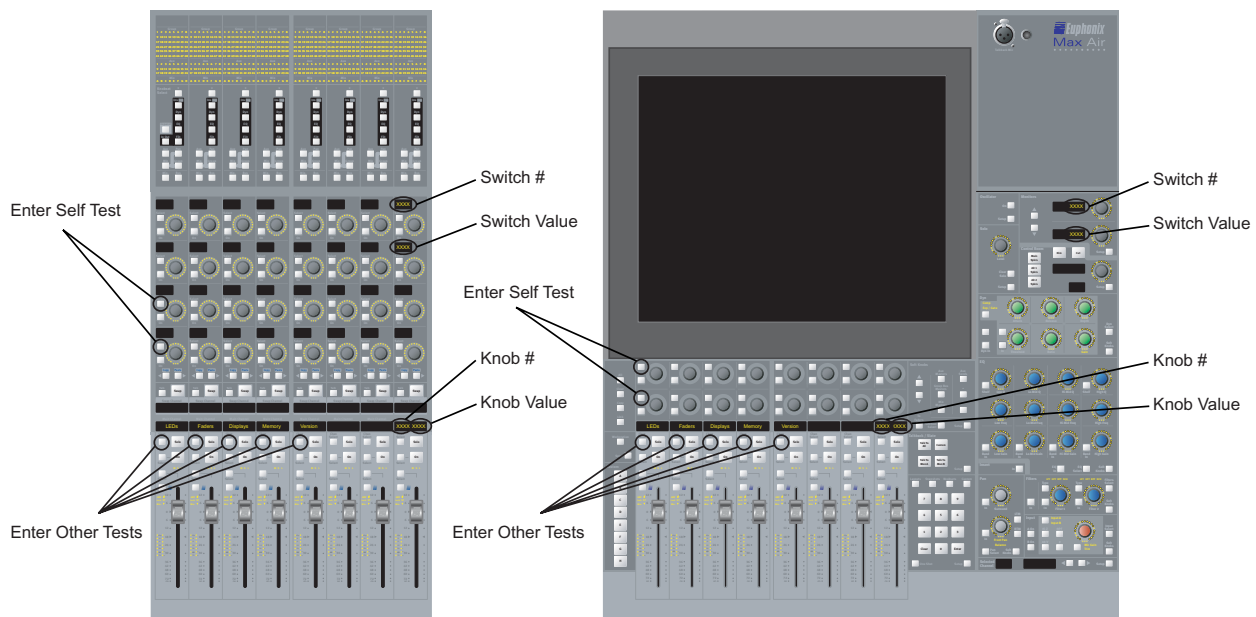
**Service (DB15HD, PS2):** VGA video and keyboard connection (for service only).

## Self Test Procedure

The following pages describe the operation of standalone self-test software for the Max Air control modules. The self-test code is designed to be invoked in a module right after power-up and before the Single Board Computer (SBC) downloads code.

### Initiating Self Test

Enter self-test by pressing the self-test enter keys shown below. This must be done before the SBC code download. If code download from the SBC occurs during the self-test, the module automatically exits self-test and executes the downloaded code. Use the keys shown below to perform the different tests. After entering the test, use the detailed description of each test on the following pages to navigate through different modes within a test.



**Figure 4** Control surface self-test keys

## Switch and Knob Test

### Momentary Switch Press

Pressing any switch toggles the switch value display from 00 to 01 and shows the switch number in the display.

### Knob Value Display

Turning any knob displays the hex value (00–60) of the knob and shows the knob number in the display.

## LED Test

### LED loop

This switch cycles through all the LED colors.

### Color Toggle

These switches light all the LEDs of each color: green, red, yellow, orange

### All LEDs

This turns all LEDs on.

---

**NOTE:** To avoid overheating, the module should not be left with **All LEDs** on for more than 5 minutes.

---

## Fader Test

### All Fader Up

All faders all the way up.

### All Fader Down

All faders all the way down.

### Fader Echo Test

All faders follow the one fader touched.

### Fader Loop Test with Speed Control

All faders cycle up and down at the speed determined by the speed control knob. This fader cycle test times out after 5 minutes to protect the faders from burning out.

### Backstop PFL Switch Test

The Backstop PFL display lights up when a fader is pulled back to enable its backstop PFL switch. This mode is always active.

### Fader I/O

- Fader Write value display  
Any value written to a fader is displayed in its designated fader write intelligent display. This mode is always active in fader test mode.
- Fader Read value display  
All faders are continuously read and the read value is displayed in its designated fader read intelligent display.

## Display Test

**Clear All**

**Char Up**

**Char Down**

**Char E**

**Char W**

**Enumerate**

## Memory Test

### ROM Test

This test reads the ROM and computes and displays the checksum. The user/tester can match the checksum to a known good checksum (see below) to make sure ROM test is successful.

CM404 Checksum - 6514

CM416 Checksum - D308

### RAM Test

This tests the upper unused portion of the CPU board RAM. The *Pass* display shows up when the test is done.

### PC104 RAM Test

This test writes and reads the whole PC104 RAM and checks for errors. The *Pass* display shows up when the test is done.

## Selecting and Adjusting the Onscreen Display

The Touchscreen image controls are found on the panel behind the Touchscreen. If the image needs adjustment, access press the **Menu** button and follow the onscreen instructions.



Figure 5



## Touchscreen Alignment

The Max Air Touchscreen can be calibrated using the **Elo Touchscreen** utility. Note that different users may have slightly different ways of touching the screen. If an operator finds they often miss onscreen objects, re-calibrate the touchscreen:

1. Select **Control Panel** from the **Start** menu.

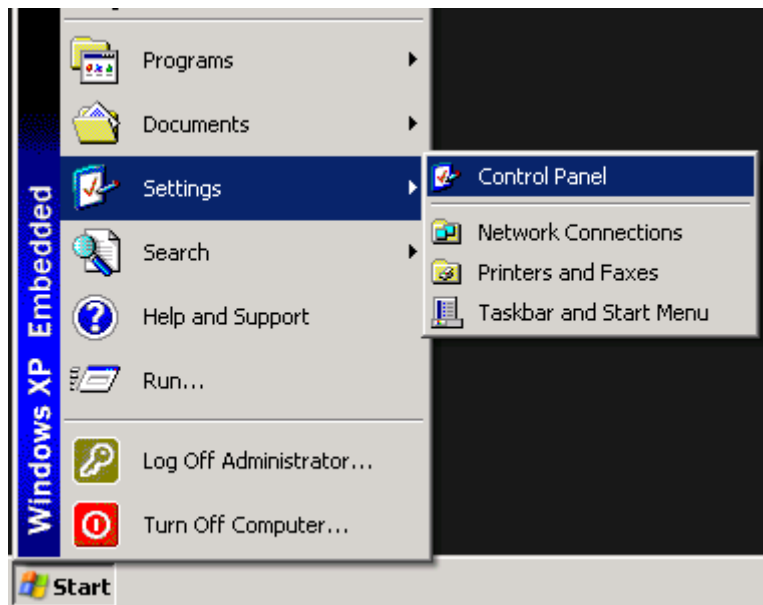


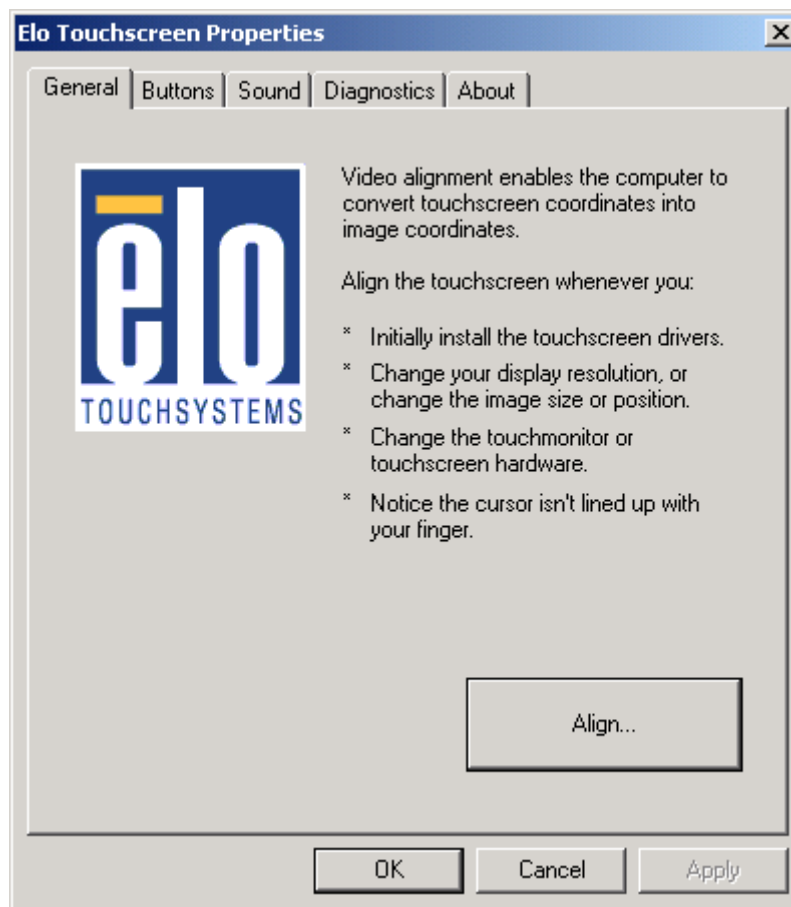
Figure 6

2. Double-touch **Elo Touchscreen**.



Figure 7

The Elo popup appears.



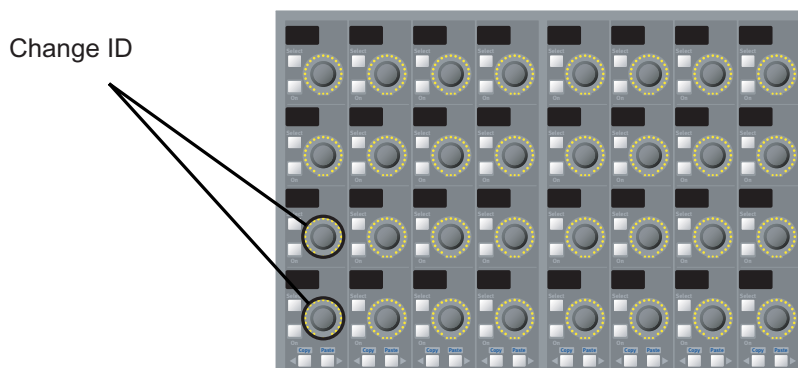
**Figure 8**

3. Touch **Align** and follow the onscreen instructions.

When asked to touch the targets on the screen, best results are achieved by touching the targets naturally without thinking too much about it. This aligns the touchscreen to an individual's hand-eye coordination.

## Changing the ID of a CM416 Module

1. Power cycle the module and then simultaneously press and hold the two lower knobs on the first strip before the module connects to the System PC (you have about 15 seconds).



**Figure 9** Changing the CM416 ID

2. Set the ID using the first strip only in each CM416. Do not set the ID using strip nine.

The CM416 displays shows “Position – 0000 Use 1st fader to set module position.”

3. Move the fader on strip one to select the ID.

The ID appears as a hexadecimal number (0=ID 1, 1=ID 2, 2=ID 3, 3=ID 4, 4=ID 5, 5=ID 6).

4. Press strip one’s fader **Select** key to commit to the new ID.

The module continues to boot only after committing to the change.

## System Ethernet IP Addresses

|                 |          |      |               |
|-----------------|----------|------|---------------|
| System Computer |          |      | 192.168.0.1   |
| Interface Pilot | ID 9     |      | 192.168.0.208 |
| Digital Pilot   | ID 1     |      | 192.168.0.200 |
| CM404           | ID 10    |      | 192.168.0.19  |
| CM416           | Strip 1  | ID 1 | 192.168.0.10  |
|                 | Strip 9  | ID 2 | 192.168.0.11  |
|                 | Strip 17 | ID 3 | 192.168.0.12  |
|                 | Strip 25 | ID 4 | 192.168.0.13  |
|                 | Strip 33 | ID 5 | 192.168.0.14  |
|                 | Strip 41 | ID 6 | 192.168.0.15  |

# Technical Specifications

## Power

|                          |  |
|--------------------------|--|
| <b>Voltage</b>           | 100–240 VAC (RMS), 50/60 Hz  |
| <b>Power Consumption</b> | 2 x 50 W per module<br>3 A Per Input(US 117 V)<br>1.5 A Per Input(Europe 230 V)<br>3 A Per Input (Japan 100 V) |
| <b>Inrush Current</b>    | 25 A   |
| <b>Fuse</b>              | T6.3AH, 250V   |
| <b>Heat Dissipation</b>  | CM404      520 BTU/hr<br>CM416      600 BTU/hr<br>CM416H     520 BTU/hr  |

## Environmental Requirements

|                              |                      |
|------------------------------|----------------------|
| <b>Operating Temperature</b> | 0–35°C (Ambient)     |
| <b>Storage Temperature</b>   | -10 to 55°C          |
| <b>Humidity</b>              | 0–90% non-condensing |

Dimensions

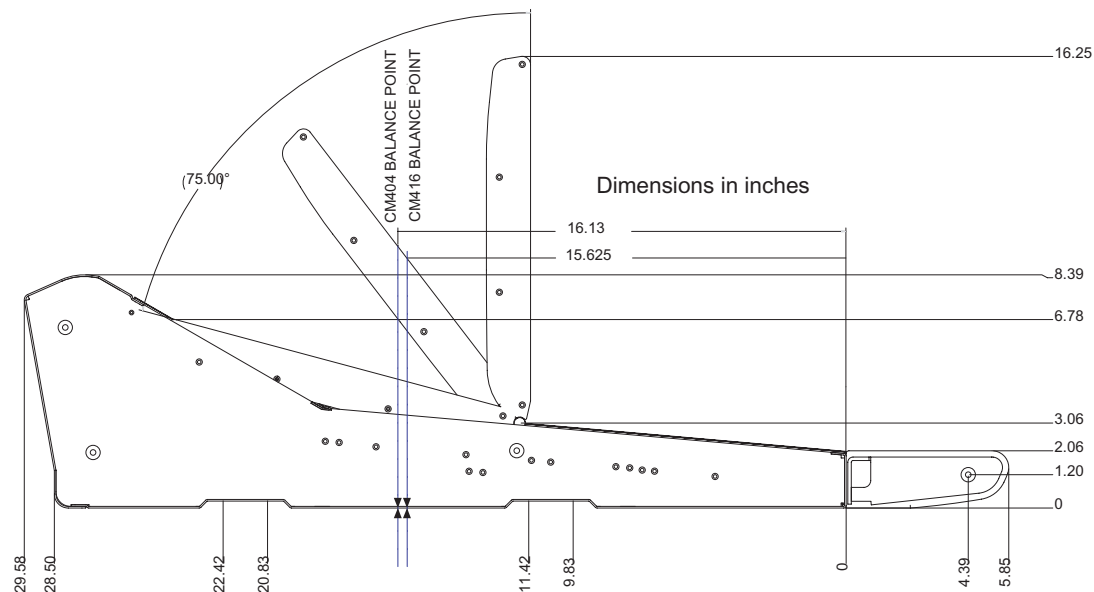


Figure 10 Side Dimensions

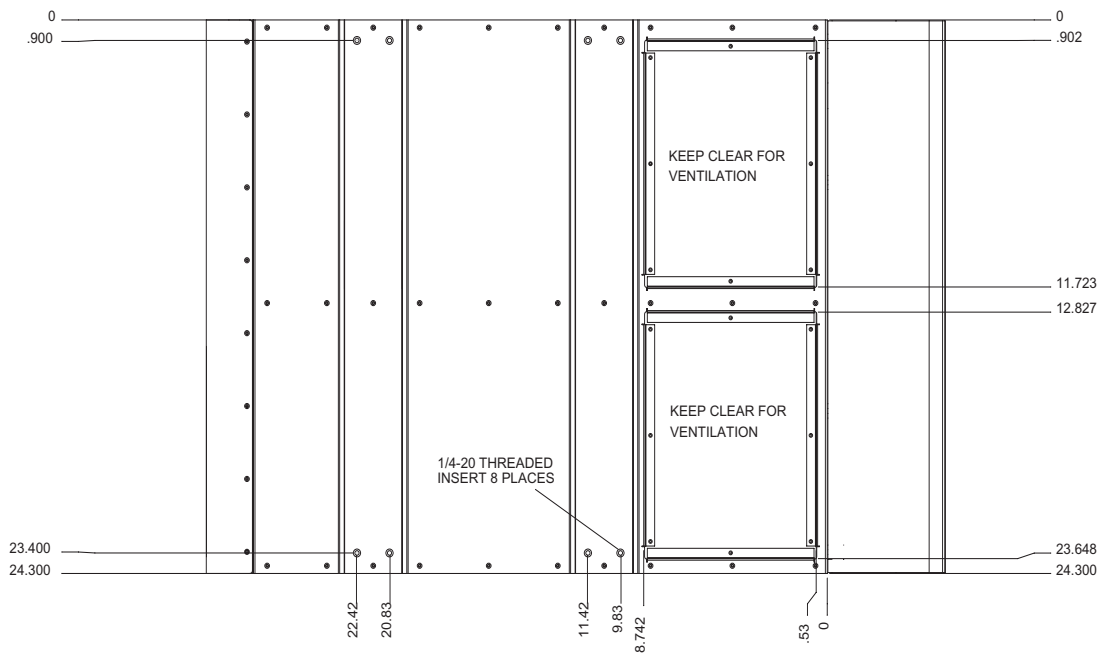


Figure 11 CM416 Bottom Dimensions

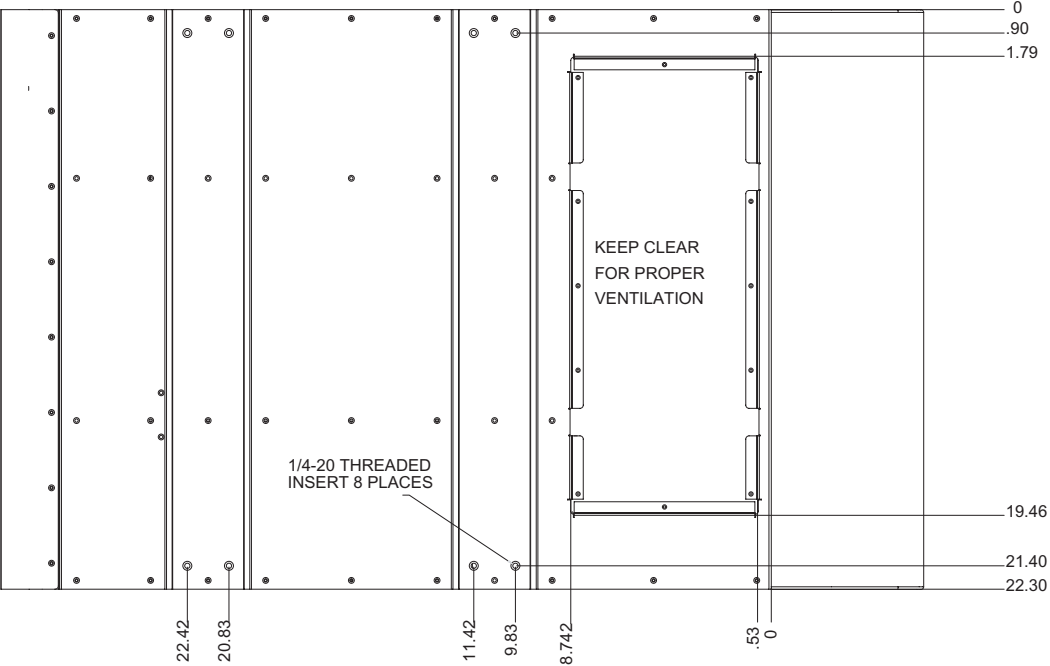


Figure 12 CM404 Bottom Dimensions

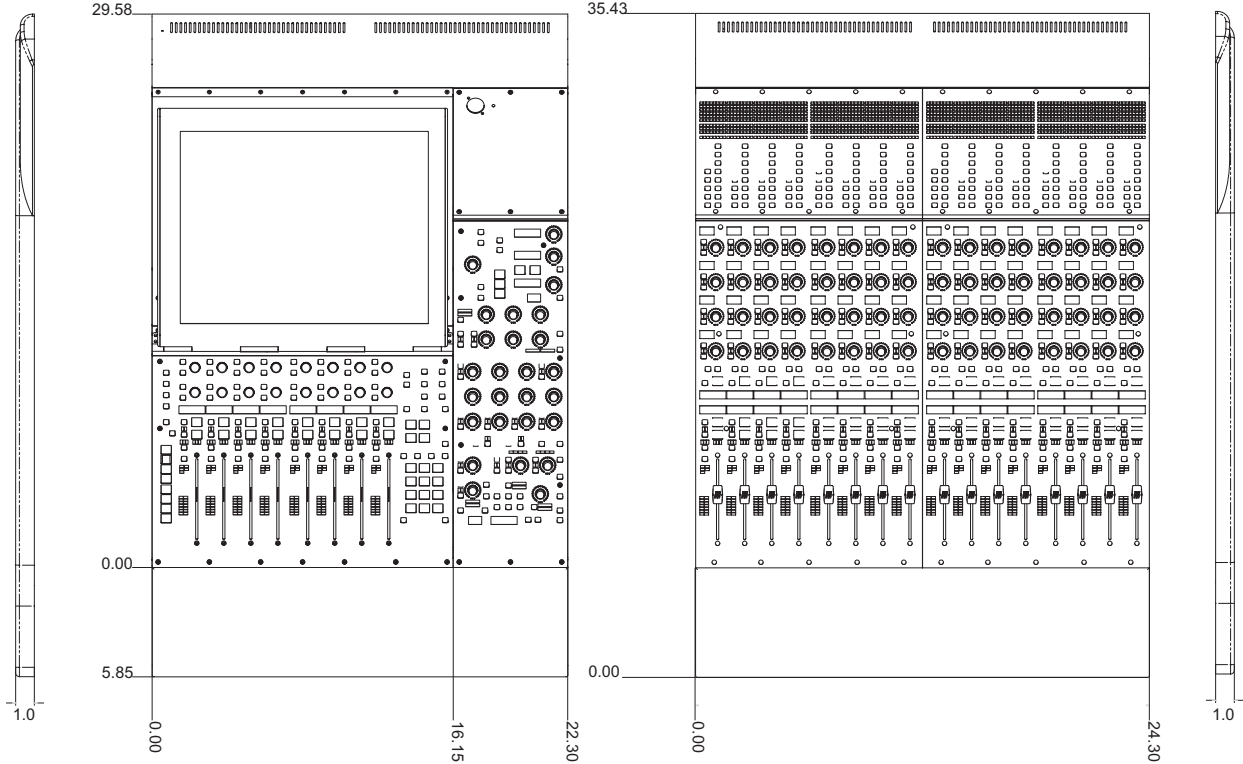
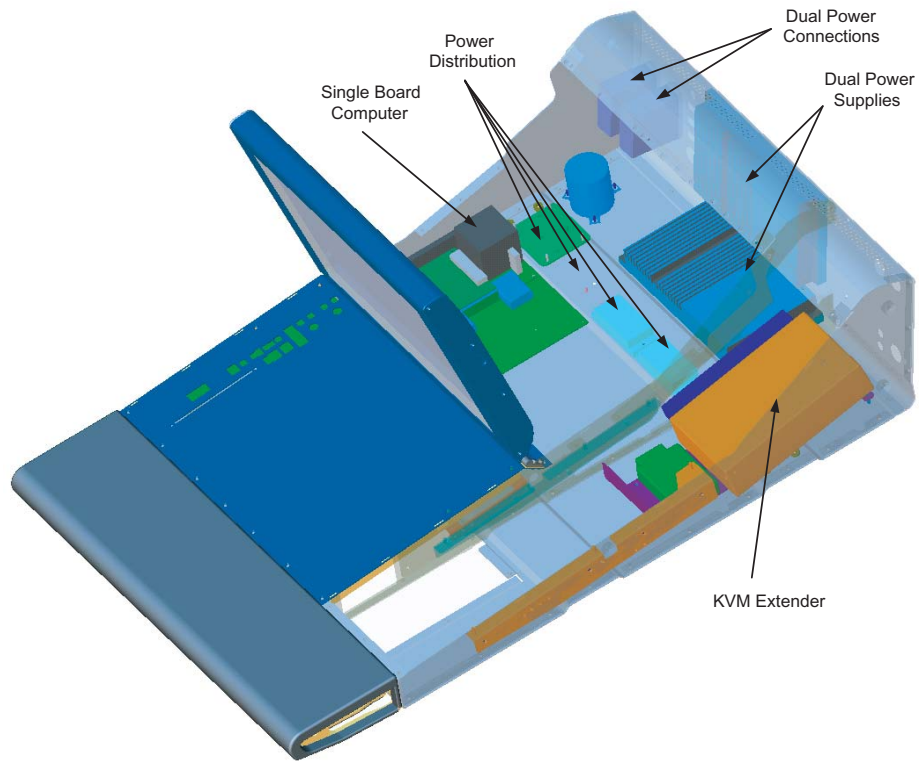


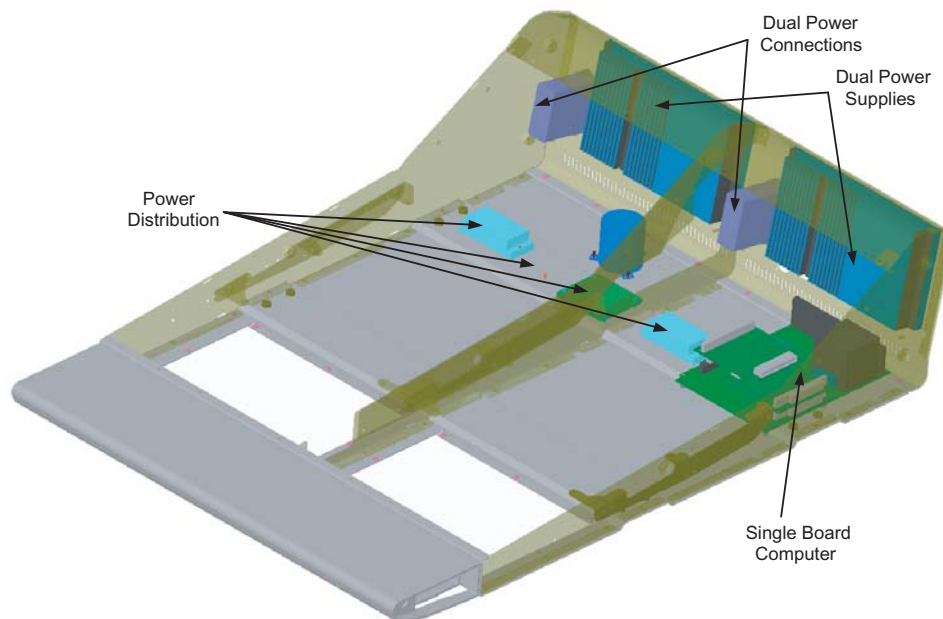
Figure 13 Max Air Top Dimensions

## User Reference

### Internal Components



**Figure 14** CM404



**Figure 15** CM416

## Fans

The CM416 modules have low-noise internal fans and a thermal sensor between the displays on strips five and six. If a module gets too hot, the fans automatically turn on at a low or high speed depending on the temperature. The fans turn off automatically when the internal temperature returns to normal.